ViArray
Trusted Rad-Hard Structured ASIC

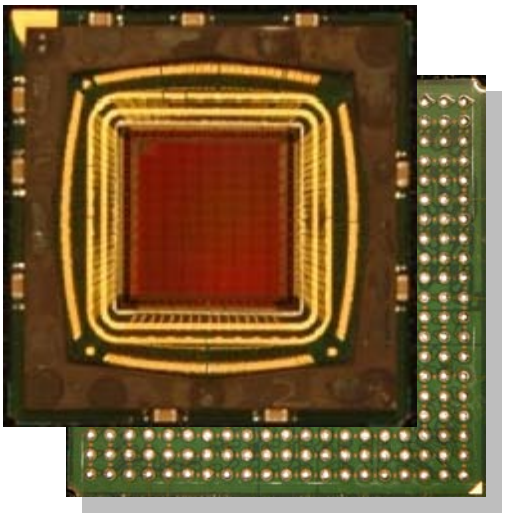
Sandia National Laboratories' structured Application Specific Integrated Circuit (ASIC) provides a radiation-hardened, via-configurable implementation platform with ASIC-like performance. Structured ASICs enable rapid turn-around, lower Non-Recurring Engineering (NRE) and development costs. Pre-qualified base arrays reduce development risk, while open architecture minimizes Diminishing Manufacturing Sources (DMS) issues. Enables safe, secure, user-defined trusted hardware, and the regular, fabric-like structure enhances verifiability of trusted parts.

Special Features

- Metal-via configurable, fabric-like structure using ViASIC™ ViaMask Technology.
- Four Power-Quadrants with specialized interface circuits that allow up to four independent power supplies for power sequencing and redundancy operations.
- Unused transistors and circuits are isolated from power and ground to minimize power consumption, static current and photocurrent.
- On-package decoupling capacitors.

Applications include:

- Command & Control
- Instrumentation
- Sensor Monitoring
- Obsolescent Parts & FPGA Emulation
- Rad-hard environment operations
- High-Reliability Systems



Sandia National Laboratories has historically focused on high-reliability custom solutions for high-consequence applications. Today Sandia is a DoD Category 1A Accredited Supplier of both "trusted design and foundry services" with an efficient and disciplined ISO 9001 certified process optimized for high-mix low-volume custom radiation-hardened, digital, analog and mixed-signal ASICs. With in-house capabilities in packaging, test, failure analysis and reliability, Sandia offers a total supply-chain solution for high-reliability custom microelectronics for expanding national security applications.

MICROSYSTEMS SCIENCE, TECHNOLOGY & COMPONENTS

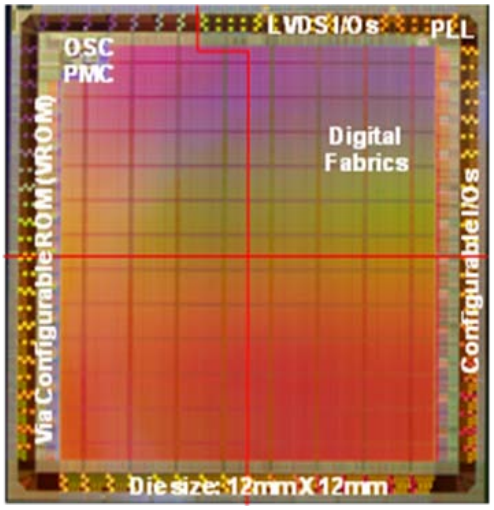
Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000. SAND2010-4821P

National Nuclear Security Administration

Sandia National Laboratories

ViArray Standard Platforms

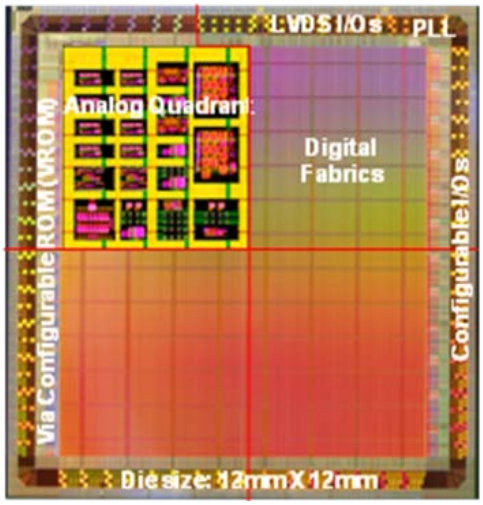
Eiger
Digital Rad-Hard ViArray



Digital Functions

- 285K Gates
- 380Kb Dual-Port RAM
- 368Kb Configurable ROM
- 239 Configurable I/Os, PCI compatible
- 8 Pairs LVDS I/Os
- Dual Oscillators
- Power Monitor Circuit
- Phase Lock Loop
- 4 Power Partitions
- Isolated Unused Circuits

Whistler
Mixed-Signal Rad-Hard ViArray



Analog Functions

- 2 Oscillators
- 3 Power Monitor Circuit
- 2 Phase Locked Loop
- 2 Band Gap Reference
- 4 A-D Converter
- 4 D-A Converter
- 4 32-bit Analog Mux
- 32 Amplifiers
- 16 Comparators
- 64 Analog Switches
- 1 8-Sample Transient Recorder
- 1 Temperature Sensor

Digital Functions

- 210K Gates
- 280Kb Dual-Port SRAM
- 288Kb Configurable ROM
- 4 Power Partitions
- Isolated Unused Circuits
- Same I/O as Eiger with 4 Hi-Voltage Capable Analog Inputs

Technology

- 3.3 v
- 0.35 µm
- SOI CMOS

Package options

- 400 pin plastic LGA 27x27 mm
- 400 Ceramic LGA in development

For more information email snlasic@sandia.gov
www.sandia.gov/mstc